

Geometry Take-Home Quiz

Due at beginning of class on Thursday, April 7, 2016

1. For # 1-11, write the coordinates of the points of the Image next to the graph.

For Example:

In #1, the pre-image has points F, W, and X. Next to the graph, list the coordinates of the points of the image – F', W' and X'. You must draw the image as well as list the coordinates of the points next to the graph.

2. For #14-19, Identify the transformation (s) that changed the pre-image to the image.

Also, be specific about the transformation. If the transformation is a

a. Translation – then describe

1) in words (up, down, right, left) + #units and

2) algebraically $(x,y) \rightarrow (x+2, y-3)$

b. Reflection – then state the axis of symmetry. For example, $X=2$ or y -axis.

c. Rotation – then state

1) # degrees

2) clockwise or counterclockwise

TRANSFORMATIONS CHEAT-SHEET!

REFLECTIONS:

- ✓ Reflections are a flip.
- ✓ The flip is performed over the "line of reflection." Lines of symmetry are examples of lines of reflection.
- ✓ Reflections are isometric, but do not preserve orientation.

Coordinate plane rules:

Over the x-axis: $(x, y) \rightarrow (x, -y)$

Over the y-axis: $(x, y) \rightarrow (-x, y)$

Over the line $y = x$: $(x, y) \rightarrow (y, x)$

Through the origin: $(x, y) \rightarrow (-x, -y)$

TRANSLATIONS:

- ✓ Translations are a slide or shift.
- ✓ Translations can be achieved by performing two composite reflections over parallel lines.
- ✓ Translations are isometric, and preserve orientation.

Coordinate plane rules:

$(x, y) \rightarrow (x \pm h, y \pm k)$ where h and k are the horizontal and vertical shifts.

Note: If movement is left, then h is negative. If movement is down, then k is negative.

DILATIONS:

- ✓ Dilations are an enlargement / shrinking.
- ✓ Dilations multiply the distance from the point of projection (point of dilation) by the scale factor.
- ✓ Dilations are not isometric, and preserve orientation only if the scale factor is positive.

Coordinate plane rules:

From the origin dilated by a factor of " c ": $(x, y) \rightarrow (cx, cy)$

From non-origin by factor of " c ": count slope from point to projection point, multiply by " c ," count from projection point.

ROTATIONS:

- ✓ Rotations are a turn.
- ✓ Rotations can be achieved by performing two composite reflections over intersecting lines. The resulting rotation will be double the amount of the angle formed by the intersecting lines.
- ✓ Rotations are isometric, and do not preserve orientation unless the rotation is 360° or exhibit rotational symmetry back onto itself.
- ✓ Rotations of 180° are equivalent to a reflection through the origin.

Coordinate plane rules:

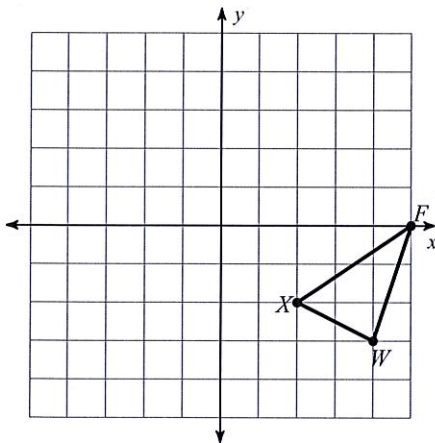
Counter-clockwise:	Clockwise:	Rule:
90°	270°	$(x, y) \rightarrow (-y, x)$
180°	180°	$(x, y) \rightarrow (-x, -y)$
270°	90°	$(x, y) \rightarrow (y, -x)$

Transformation Review

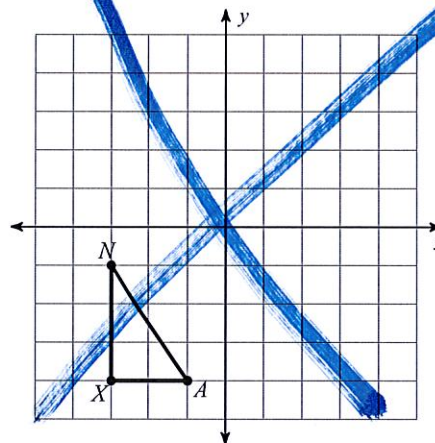
Date _____ Period _____

Graph the image of the figure using the transformation given.

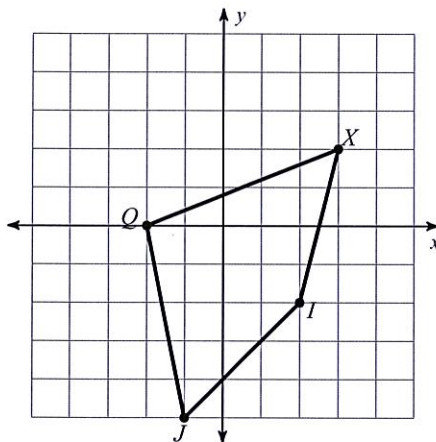
1) translation: 7 units left and 3 units up



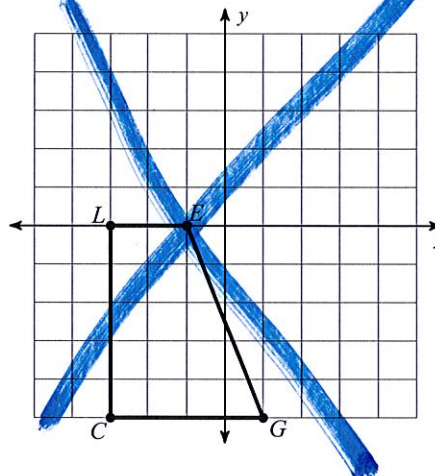
2) translation: 4 units right and 5 units up



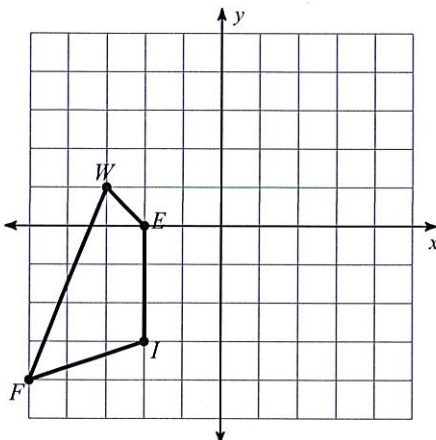
3) rotation 90° counterclockwise about the origin



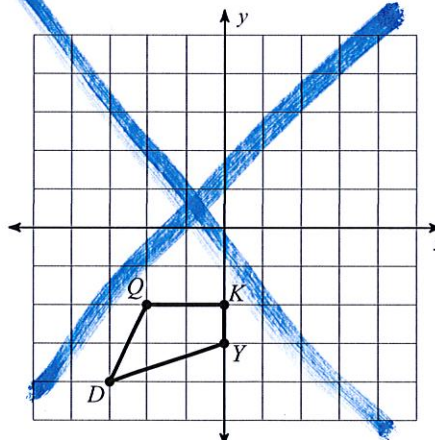
4) translation: 4 units right and 4 units up



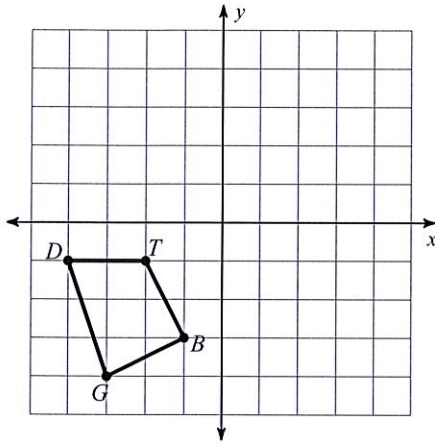
5) rotation 180° about the origin



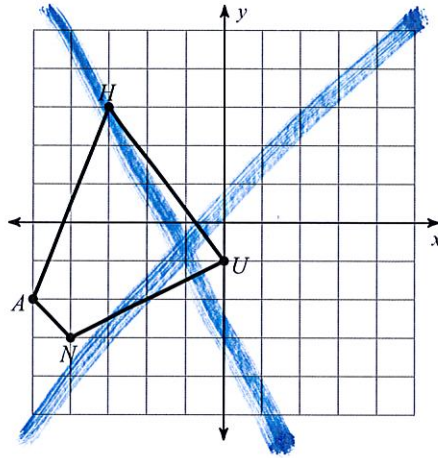
6) translation: 1 unit left and 6 units up



7) rotation 90° clockwise about the origin

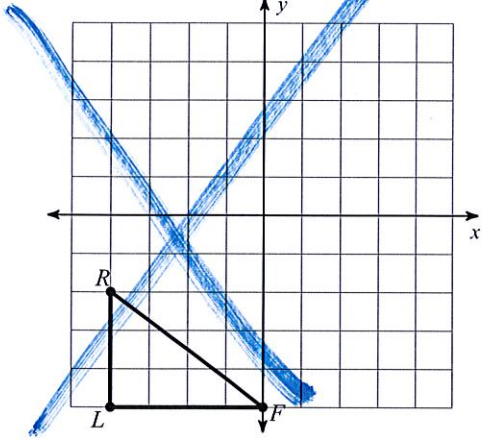


8) rotation 180° about the origin

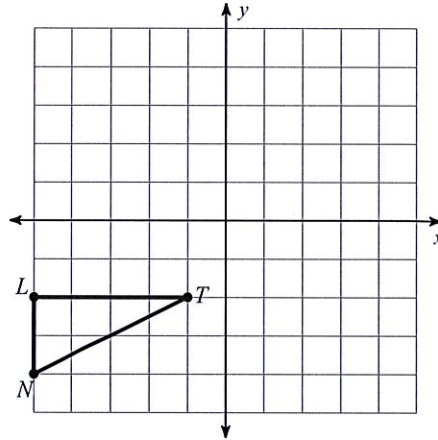


Find the coordinates of the vertices of each figure after the given transformation.

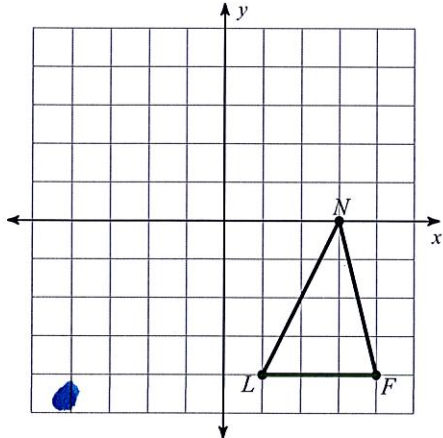
9) rotation 90° clockwise about the origin



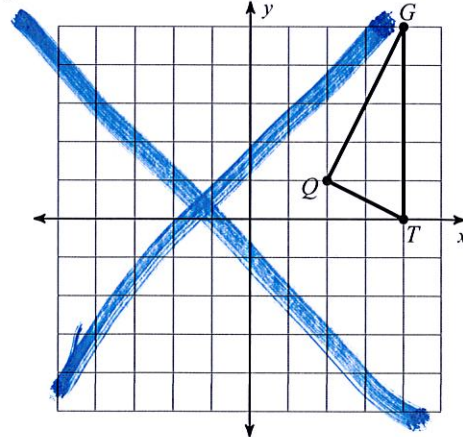
10) reflection across $y = -1$



11) reflection across the x-axis

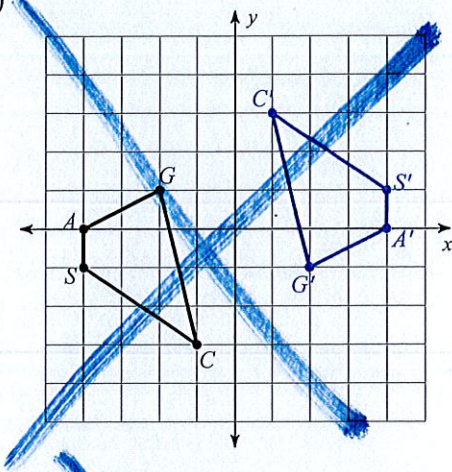


12) reflection across $y = -x$

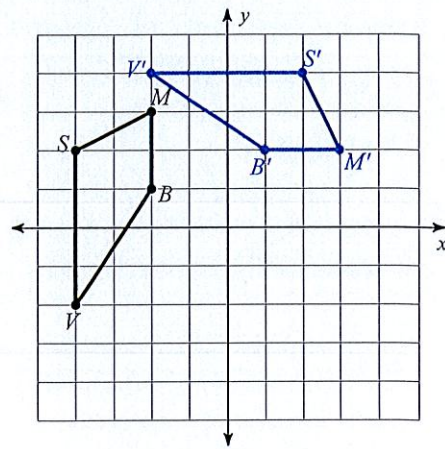


Write a rule to describe each transformation.

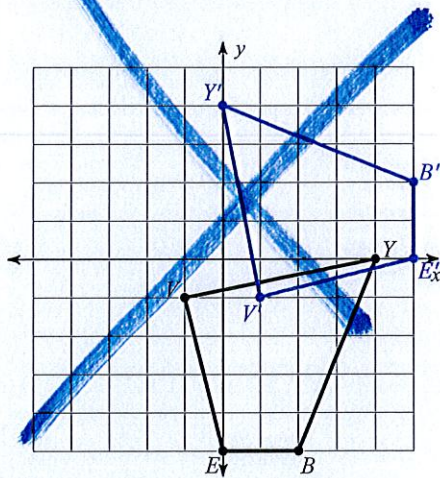
13)



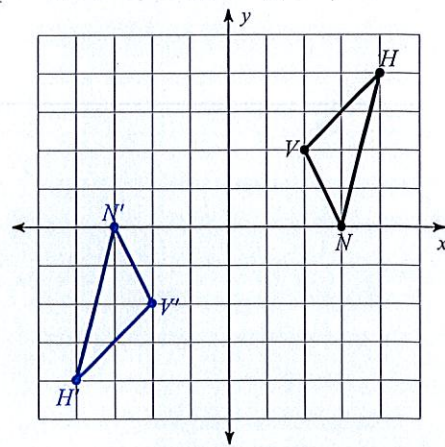
14)



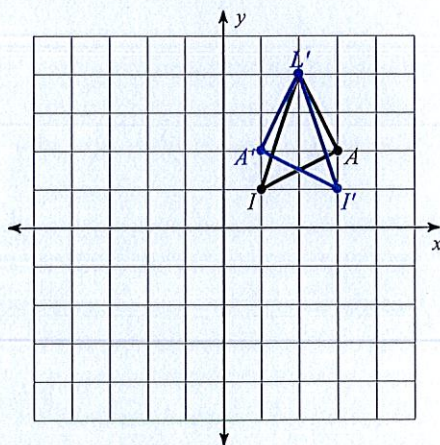
15)



16)



17)



19)

